

GCC CTC GCA GAG GGC ACT CGG ATC TTC GAT CCG GTC ACC GGT ACA
ACG CAT CGC ATC GAG GAT GTT GTC GgT GGG CGC AAG CCT ATT CAT GTC
GTG GCT GCT GCC AAG GAC GGA ACG CTG CAT GCG CGG CCC GTG GTG
TCC TGG TTC GAC CAG GGA ACG CGG GAT GTG ATC GGG TTG CGG ATC
GCC GGT GGC GCC ATC cTG TGG GCG ACA CCC GAT CAC AAG GTG CTG
ACA GAG TAC GGC TGG CGT GCC GCC GGG GAA CTC CGC AAG GGA GAC
AGG GTG GCG CAA CCG CGA CGC TTC GAT GGA TTC GGT GAC AGT GCG
CCG ATT CCG GCG CGC GTG CAG GCG CTC GCG GAT GCC CTG GAT GAC
AAA TTC CTG CAC GAC ATG CTG GCG GAA GAA CTC CGC TAT TCC GTG ATC
CGA GAA GTG CTG CCA ACG CGG CGG GCA CGA ACG TTC GgC CTC GAG
GTC GAG GAA CTG CAC ACC CTC GTC GCC GAA GGG GTT GTT GTA CAC AAC
(SEQ ID NO: 1)

A LAEGTRIFDPVTGTTTHRIEDVVVGGR
KPIHVVAAKDGTLLHARPVVSWFDQG
TRDVIGLRIAGGAILWATPDHKVLTE
Y GWRAAGELRKGDRAQPRRFDGFG
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EELRYSVIREVLPTRRARTFGLVEEE
LHTLVAEGVVVHN (SEQ ID NO: 2)

GCC CTC GCA GAG GGC ACT CGG ATC TTC GAT CCG GTC ACC GGT ACA
ACG CAT CGC ATC GAG GAT GTT GTC GgT GGG CGC AAG CCT ATT CAT GTC
GTG GCT GCT GCC AAG GAC GGA ACG CTG CAT GCG CGG CCC GTG GTG
TCC TGG TTC GAC CAG GGA ACG CGG GAT GTG ATC GGG TTG CGG ATC
GCC GGT GGC GCC ATC cTG TGG GCG ACA CCC GAT CAC AAG GTG CTG
ACA GAG TAC GGC TGG CGT GCC GCC GGG GAA CTC CGC AAG GGA GAC
AGG GTG GCG CAA CCG CGA CGC TTC GAT GGA TTC GGT GAC AGT GCG
CCG ATT CCG GCG CGC GTG CAG GCG CTC GCG GAT GCC CTG GAT GAC
AAA TTC CTG CAC GAC ATG CTG GCG GAA GAA CTC CGC TAT TCC GTG ATC
CGA GAA GTG CTG CCA ACG CGG CGG GCA CGA ACG TTC GgC CTC GAG
GTC GAG GAA CTG CAC ACC CTC GTC GCC GAA GGG GTc cTT GTA CAC AAC (SEQ
ID NO: 3)

A LAEGTRIFDPVTGTTTHRIEDVVVGGR
KPIHVVAAKDGTLLHARPVVSWFDQG
TRDVIGLRIAGGAILWATPDHKVLTE
Y GWRAAGELRKGDRAQPRRFDGFG

D S A P I P A R V Q A L A D A L D D K F L H D M L A
E E L R Y S V I R E V L P T R R A R T F G L E V E E
L H T L V A E G V L V H N (SEQ ID NO: 4)

GCC CTC GCA GAG GGC ACT CGG ATC TTC GAT CCG GTC ACC GGT ACA
ACGCATCGCATCGAGGATGTTGTCGgTGGCGCAAGCCTATTCATGTC GTG
GCT GCT GCC AAG GAC GGA ACG CTG CAT GCG CGG CCC GTG GTG
TCC TGG TTC GAC CAG GGA ACG CGG GAT GTG ATC GGG TTG CGG ATC
GCC GGT GGC GCC ATC cTG TGG GCG ACA CCC GAT CAC AAG GTG CTG
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AGG GTG GCG CAA CCG CGA CGC TTC GAT GGA TTC GGT GAC AGT GCG
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CAG GCG CTC GCG GAT GCC CTG GAT GAC AAA TTC CTG CAC GAC ATG
CTG GCG GAA GAA CTC CGC TAT TCC GTG ATC CGA GAA GTG CTG CCA
ACG CGG CGG GCA CGA ACG TTC GgC CTC GAG GTC GAG GAA CTG CAC
ACC CTC GTC GCC GAA GGG GTT GTT GTA CAC AAC (SEQ ID NO: 5)

A L A E G T R I F D P V T G T T H R I E D V V G G R
K P I H V V A A A K D G T L H A R P V V S W F D Q G
T R D V I G L R I A G G A I L W A T P D H K V L T E
Y G W R A A G E L R K G D R V A Q P R R F D G F G
D S A P I P T S L Y K K A G S A R V Q A L A D A L D
D K F L H D M L A E E L R Y S V I R E V L P T R R A
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GCC CTC GCA GAG GGC ACT CGG ATC TTC GAT CCG GTC ACC GGT ACA
ACG CAT CGC ATC GAG GAT GTT GTC GgT GGG CGC AAG CCT ATT CAT GTC
GTG GCT GCT GCC AAG GAC GGA ACG CTG CAT GCG CGG CCC GTG GTG
TCC TGG TTC GAC CAG GGA ACG CGG GAT GTG ATC GGG TTG CGG ATC
GCC GGT GGC GCC ATC cTG TGG GCG ACA CCC GAT CAC AAG GTG CTG
ACA GAG TAC GGC TGG CGT GCC GCC GGG GAA CTC CGC AAG GGA GAC
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CCG ATT CCG ACA AGT TTG TAC AAA AAA GCA GGC AGC GCG CGC GTG
CAG GCG CTC GCG GAT GCC CTG GAT GAC AAA TTC CTG CAC GAC ATG
CTG GCG GAA GAA CTC CGC TAT TCC GTG ATC CGA GAA GTG CTG CCA
ACG CGG CGG GCA CGA ACG TTC GgC CTC GAG GAA CTG CAC ACC CTC
GTC GCC GAA GGG GTc cTT GTA CAC AAC (SEQ ID NO: 7)

A LA E G T R I F D P V T G T T H R I E D V V G G R
K P I H V V A A A K D G T L H A R P V V S W F D Q G
T R D V I G L R I A G G A I L W A T P D H K V L T E
Y G W R A A G E L R K G D R V A Q P R R F D G F G
D S A P I P T S L Y K K A G S A R V Q A L A D A L D
D K F L H D M L A E E L R Y S V I R E V L P T R R A
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1 caaggagatg gcgcccaaca gtcccccggc cacggggcct gccaccatac ccacgccgaa
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6121 catgccatac cgcggaaagggt ttggccat tcgtatgggtt ccgggatctc gacgctctcc
6181 cttatgcgac tcctgcattt ggaaggcagcc cagtagtagg ttgaggccgt tgagcaccgc
6241 cggcccaagg aatgggtcat g (SEQ ID N0:9)

pET-GWTMIT

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pET-TMIT

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attL5 CAACTTTATTATACAAAGTTGGCA (SEQ ID NO:14)
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attB11 CAACTTTCTATA~~CAAAGTTGT~~ (SEQ ID NO:16)
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attP11 GTTCAACTTTCTATA~~CAAAGTTGGCA~~ (SEQ ID NO:17)
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attR19 GTTCAACTTTTCGTAC~~CAAAGTTGT~~ (SEQ ID N0:27)
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attL0 AGCCTGCTTTTATA~~ACTA~~AAGTTGGCA (SEQ ID NO:30)

TCGGACGAAAAAATATGATTCAACCGT

- attR0* GTTCAGCTTTTATACTAACTTGAGC (SEQ ID N0:31)
CAAGTCGAAAAAATATGATTGAACCTCG
- attB1* AGCCTGCTTTGTACAAACTTGT (SEQ ID NO:32)
TCGGACGAAAAAATATGTTGAACA
- attP1* GTTCAGCTTTGTACAAAGTTGGCA (SEQ ID N0:33)
CAAGTCGAAAAACATGTTCAACCGT
- attL1* AGCCTGCTTTGTACAAAGTTGGCA (SEQ ID N0:34)
TCGGACGAAAAACATGTTCAACCGT
- attR1* GTTCAGCTTTGTACAAACTTGT (SEQ ID NO:35)
CAAGTCGAAAAACATGTTGAACA
- attB2* ACCCAGCTTGTACAAAGTGGT (SEQ ID N0:36)
TGGGTCGAAAGAACATGTTCACCA
- attP2* GTTCAGCTTGTACAAAGTTGGCA (SEQ ID NO:37)
CAAGTCGAAAGAACATGTTCAACCGT
- attL2* ACCCAGCTTGTACAAAGTTGGCA (SEQ ID NO:38)
TGGGTCGAAAGAACATGTTCAACCGT
- attR2* GTTCAGCTTGTACAAAGTGGT (SEQ ID NO:39)
CAAGTCGAAAGAACATGTTGACCA
- attB5* CAACTTATTATAACAAAGTTGT (SEQ ID NO: 40)
GTTGAAATAATATGTTCAACA
- attP5* GTTCAACTTTATTATAACAAAGTTGGCA (SEQ ID N0:41)
CAAGTTGAAATAATATGTTCAACCGT
- attB20* CAACTTGGTACAAAGTTGT (SEQ ID N0:42)
GTTGAAAAACCATGTTCAACA
- attP20* GTTCAACTTTGGTACAAAGTTGGCA (SEQ ID N0:43)
CAAGTTGAAAAACCATGTTCAACCGT
- attL20* CAACTTGGTACAAAGTTGGCA (SEQ ID N0:44)
GTTGAAAAACCATGTTCAACCGT
- attR20* GTTCAACTTTGGTACAAAGTTGT (SEQ ID N0:45)
CAAGTTGAAAAACCATGTTCAACA

attB21 CAACTTTTAATACAAAGTTGT (SEQ ID N0:46)
GTTGAAAAATTATGTTCAACA

attP21 GTTCAACTTTTAATACAAAGTTGGCA (SEQ ID N0:47)
CAAGTTGAAAAATTATGTTCAACCGT

attL21 CAACTTTTAATACAAAGTTGGCA (SEQ ID N0:48)
GTTGAAAAATTATGTTCAACCGT

attR21 GTTCAACTTTTAATACAAAGTTGT (SEQ ID N0:49)
CAAGTTGAAAAATTATGTTCAACA